

## Two New Species of the Genus *Trophithauma* SCHMITZ from Japan (Diptera, Phoridae)\*

Tadao GOTO

Entomological Laboratory, Faculty of Agriculture,  
Kyushu University, Fukuoka, 812 Japan

(Received June 30, 1983)

**Abstract** *Trophithauma fulvum* sp. nov. and *T. pellucidum* sp. nov. are described and illustrated from Japan. The genus *Trophithauma* is recorded for the first time from the Palearctic Region.

The metopine genus *Trophithauma* was founded by SCHMITZ on *T. portentum* SCHMITZ, 1925 from Costa Rica and presently contains only 2 other species, i.e., *T. dissitum* SCHMITZ, 1925 from Philippines and *T. rostratum* (MELANDER & BRUES, 1903) from North America. In the subfamily Metopininae this genus is easily recognized in the female by the strongly elongate and anteriorly produced epistoma, the proximal cornu of fulcrum extending into a very long apodemal process ("Spange" of SCHMITZ, 1929; stripe of BORGMEIER, 1963) and the modified 3rd to 6th abdominal segments. On the other hand the males of *Trophithauma* may be confused with those of *Megaselia*, but a combination of the following characters is somewhat helpful in recognizing *Trophithauma* males; shining frons with median furrow, raised ocellar triangle, relatively long 3rd costal sector and subshining thorax. Otherwise the structure of aedeagus may offer some useful characters, but in *Trophithauma* and also in many genera of the Metopininae our knowledge on this structure is so poor that it is presently difficult to use it as the distinguishing character of the genus.

In this paper two additional species of *Trophithauma* are described from Japan. This is the first record of the genus from the Palearctic Region.

Before going further I wish to express my hearty thanks to Prof. Y. HIRASHIMA and Assoc. Prof. K. MORIMOTO of the Entomological Laboratory, Kyushu University for their constant encouragements. I am also much indebted to Prof. T. SAIGUSA of the Biological Laboratory, Kyushu University for his critical suggestions in preparing this manuscript. My cordial thanks are due to Prof. T. SAIGUSA, Mr. K. ÔHARA and Mr. K. MAETÔ of Kyushu University for offering invaluable specimens. I am sincerely grateful to Drs. M. ÔTA and K. UEDA

---

\* Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 3, No. 141).

of the Kitakyushu Museum of Natural History, Kitakyushu for their kindness arranging the publication of this paper.

***Trophithauma fulvum* sp. nov.**

*Female.* Head width 0.54–0.61 mm. Compound eye minutely haired. Ocellar triangle raised. Frons shining, dark castaneous, width at the level of antial seta 0.43–0.49 of head width, slightly widened posteriorly, with median furrow. Chaetotaxy: Preocellar seta as long as mediolateral, generally at the level of mediolateral; antial seta ventral to anterolateral, closer to anterolateral than to supra-antennal or equidistant from them; a pair of supra-antennal setae proclinate; frontal setulae sparse. A row of 5–8 short hairs on lower parafacial portion and very narrow gena. Upper and lower postocular setae very strong. Antenna dark brown; 3rd antennal segment globose, slightly shorter than wide; arista dorsal, slightly longer than  $5 \times$  length of 3rd antennal segment, with long pubescence. Palpus yellowish brown, slender,  $6 \times$  as long as wide, with 14–17 short bristles on distal 1/2 of its ventral portion. Epistoma brown, grayish brown pollinose, strongly produced anteroventrally into a rectangular plate which is distinctly longer than wide and densely pilose. Proboscis greatly elongated; clypeus brown, remarkably apart from epistoma; proximal cornu of furcrum very elongate, i.e., short extending anteriorly, then curved posterodorsally and produced into a long apodemal process which is longer than head height; labrum yellowish brown, narrowed distally; prementum subquadrate in shape; labellum brownish yellow, large.

Thorax subshining, yellowish brown, mesokatepisternum and ventral 1/2 of metepisternum yellow to pale yellow; scutum short setulose, with a pair of dorso-central setae; mesoanepisternum divided, bare; scutellum with a pair of long setae and an other pair of minute hairs.

Wing hyaline, tinged with grayish yellow; all veins yellowish brown to brown. Costa relatively long, costal index 0.56–0.59; combined length of 2nd and 3rd costal sectors  $1.09\text{--}1.23 \times$  as long as 1st; 3rd costal sector 0.65–0.83 of 2nd in length. Vein  $M_1$  curved anteriorly; vein  $M_2$  weakly curved on proximal 2/3, then almost straight to tip; vein  $M_{3+4}$  bisinuate; vein  $A_1$  weakly curved, evanescent at wing margin. Costal cilia about  $3 \times$  as long as width of costa; vein Rs subbasally with a minute hair; axillary margin with 4–6 hairs; wing membrane entirely trichose. Halter brownish yellow. Wing length 2.20–2.51 mm, width 0.99–1.09 mm.

Legs yellow, mid coxa brown on its anterior and posterior portions. Fore tibia slightly shorter than 1st to 3rd tarsomeres together; fore tarsus narrower than tip of fore tibia, dilated, 1st tarsomere  $5 \times$  as long as wide, other tarsomeres about  $2 \times$  as long as wide, 1st to 3rd ones with same width, 4th slightly narrower

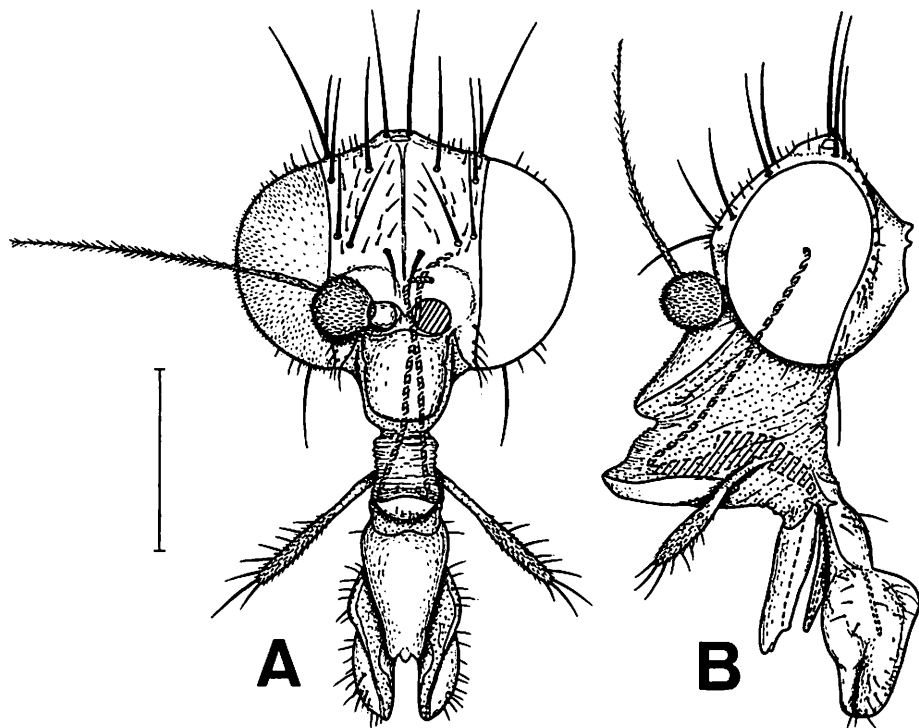


Fig. 1. Female head of *Trophithauma fulvum* sp. nov.  
A. Frontal view; B. lateral view. Scale: 0.3 mm.

than 3rd, 5th slightly narrower than 4th. Mid tibia bearing a weak anterodorsal hair-seam and a dorsal row of sparse hairs, with a long end-spur. Hind tibia bearing a dorsal hair-seam and a posterodorsal row of hairs, with a long end-spur.

Table 1. Relative lengths of leg segments of *Trophithauma fulvum* sp. nov. ♀

	Femur	Tibia	Tarsus				
			1	2	3	4	5
Fore leg	125	100	58	28	23	20	15
Mid leg	140	110	78	40	30	20	15
Hind leg	175	160	83	55	40	25	20

Abdomen brown to dark brown. First tergum very short, about  $1/7$  of 2nd in length, with sparse minute hairs. Second tergum broad, rectangular,  $1.4 \times$  as wide as long, sparsely minutely haired. Third tergum with sparse minute hairs, longer than 2nd,  $1.2 \times$  as long as wide, slightly narrowed posteriorly,

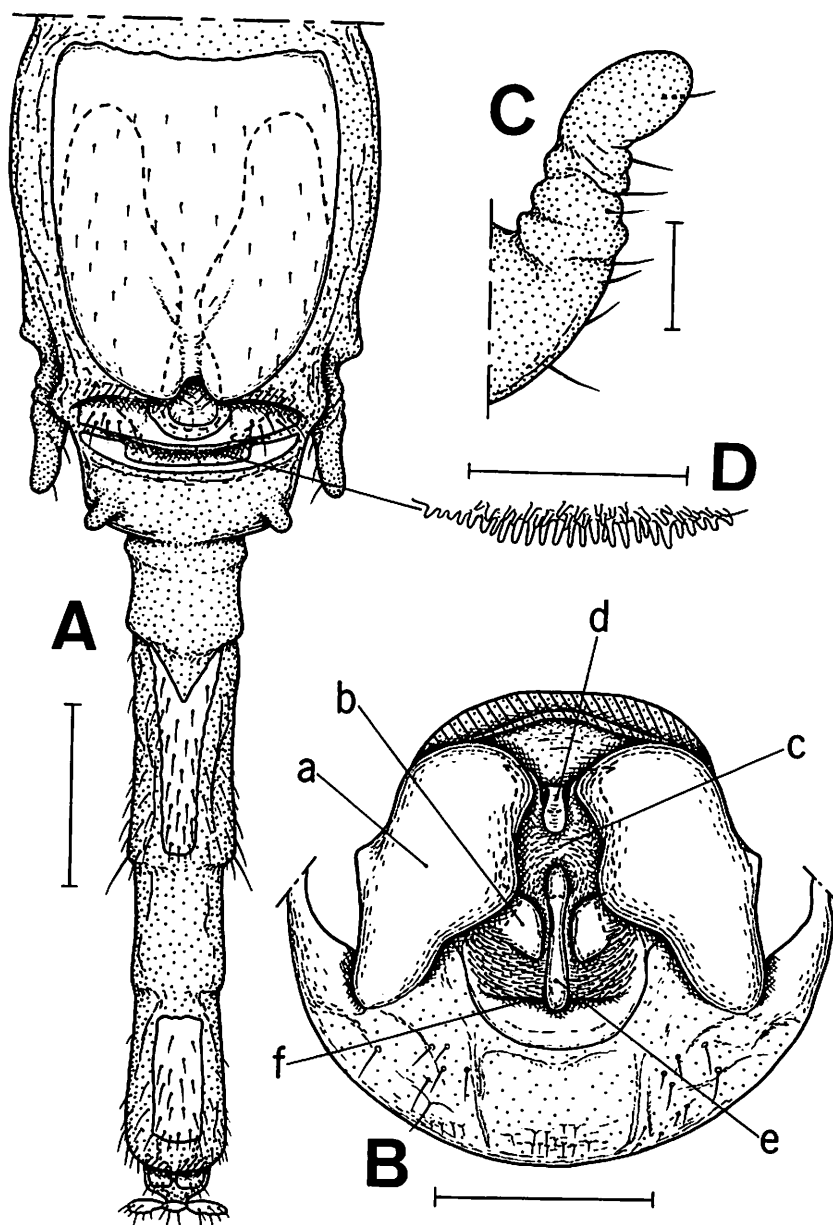


Fig. 2. Female abdomen of *Trophithauma fulvum* sp. nov.

A. Abdomen in dorsal view (1st and 2nd segments omitted); B. 4th tergum in dorsal view;  
 C. membranous projection of 3rd segment in lateral view; D. spinules.  
 Scale: A=0.3 mm; B-D=0.1 mm.

emarginate at middle of rounded posterior margin and bearing several minute hairs on each side of the emarginate portion, with weak depression on posterior 1/3 of its median portion where color is entirely black; 3rd segment possessing a pair of membranous projections on ventrolateral portions near posterior margin, the projection dark brown and bearing several short hairs on its ventral portion. Fourth tergum very small, concealed under 3rd tergum, highly modified by reason of a small gland opening at its middle; the tergum possessing on each side a large swelling (Fig. 2, a) which bears flat process (b) at middle of its inner margin, these swellings anteriorly connected with each other by anterodorsally curved and minutely haired flat plate (c) which is strongly emarginate on its anterior margin, over this plate a slender process (d) arising from middle of anterior cavity of the tergum, the tergum possessing a narrow keel (e) on densely haired middle portion and carrying orifice (f) of a small gland just behind the keel. Fifth tergum short, strongly emarginate on middle portion of its anterior margin, bearing several hairs on widened lateral portions; a pair of large glands opening just behind 5th tergum, the common orifice of the glands furnished with minute spinules on its dorsal portion as in Fig. 2, D. Sixth tergum occupying anterior portion of 6th segment, widely concave on its anterior margin; 6th segment possessing a pair of membranous, eversible, transparent short projections on transparent subdorsal portions. Terminalia: Long; 7th segment long, short haired, 7th tergum tapering posteriorly, deeply emarginate on anterior margin, 7th sternum narrow, rectangular in shape; 8th segment posteroventrally with a pair of rather long membranous lobes, 8th tergum rectangular,  $3\times$  as long as wide, 8th sternum absent; 9th tergum divided on median portion into 2 quadrate lateral plates, each of which bears inner apophysis on anterior margin, 9th sternum small, with rounded posterior margin; 10th tergum very small, oval; cercus short, with short hairs.

Body length: 1.71–2.57 mm.

*Male.* Differing from female as follows: Epistoma not elongate, weakly produced anteriorly; proboscis of ordinary type; palpus short,  $3\times$  as long as wide. Costal index 0.53–0.56; combined length of 2nd and 3rd costal sectors distinctly longer than 1st, 1.33–1.39 of 1st in length; 3rd costal sector 0.65–0.68 of 2nd in length; wing length 1.86–2.05 mm, width 0.78–0.90 mm.

Abdomen normal in structure; all terga brown, grayish brown pollinose, 1st tergum very short, 2nd tergum somewhat longer than other terga, 3rd to 6th terga with same length; 1st and 2nd terga very sparsely short haired, 3rd to 5th terga sparsely short haired, 6th tergum with bristly hairs on posterior margin.

Male genitalia brown, anal tube brownish yellow. Epandrium bearing many bristles on posterior 1/2, rounded on left posterior margin, produced into 2 short processes on right posterior margin, inner one of which is hook-like in lateral view, outer one thick and rounded on its posterior margin. Hypandrium

articulated with epandrium, partially membranized as in Fig. 3, A & C; ventral plate broad, weakly rounded on posterior margin, entirely short haired. Aedeagus supported by 2 arms, one of which is "Tragplatte" of Schmitz and the other short process arised from left posterodorsal corner of hypandrium, these arms articulated with ringed sclerite of aedeagus. Aedeagus consisting of following 5 sclerites; ringed sclerite lying on proximal portion of aedeagus, the sclerite produced posteriorly on its posteroventral margin into broad flat plate, just behind this plate 2 small flat sclerites lying abreast; broad, arched sclerite occupying subproximal portion of aedeagus, the sclerite gradually tapering and curved ventrally toward its right tip; long, slender sclerite attached with distal portion of aedeagus on its U-shaped base, then freely extending anteriorly, distal portion of the sclerite suddenly curved outwardly and widened to form weakly

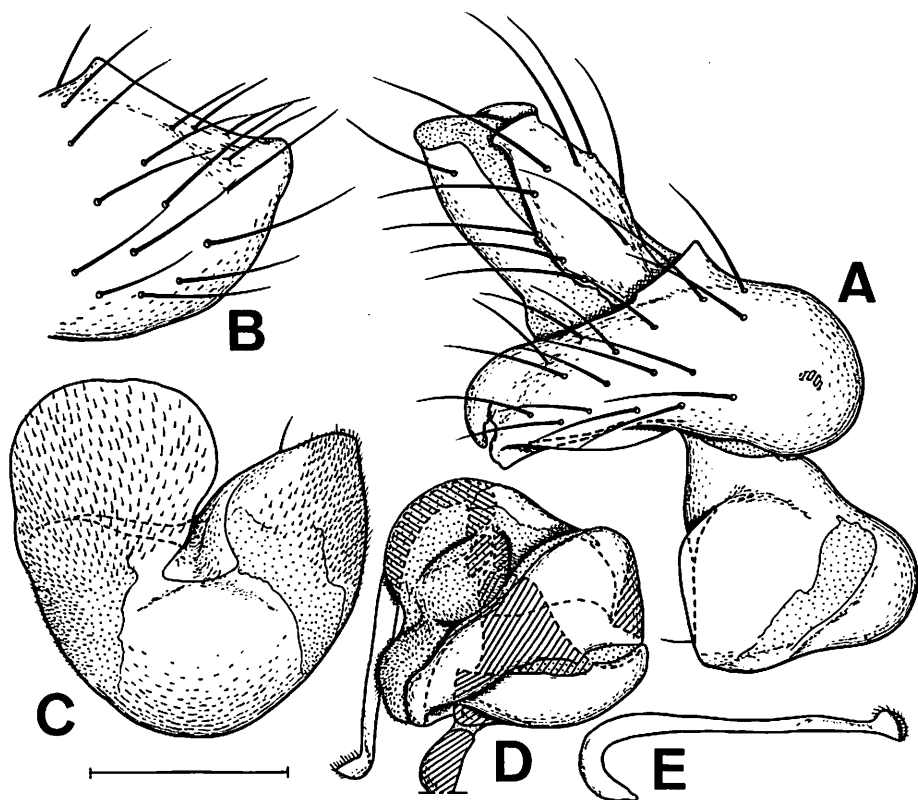


Fig. 3. Male genitalia of *Trophithauma fulvum* sp. nov.

A. Male genitalia in right lateral view (opposite side and aedeagus omitted); B. epandrium in left lateral view; C. hypandrium in ventral view; D. aedeagus in dorsal view; E. right slender sclerite of aedeagus in lateral view.

Scale: 0.1 mm.

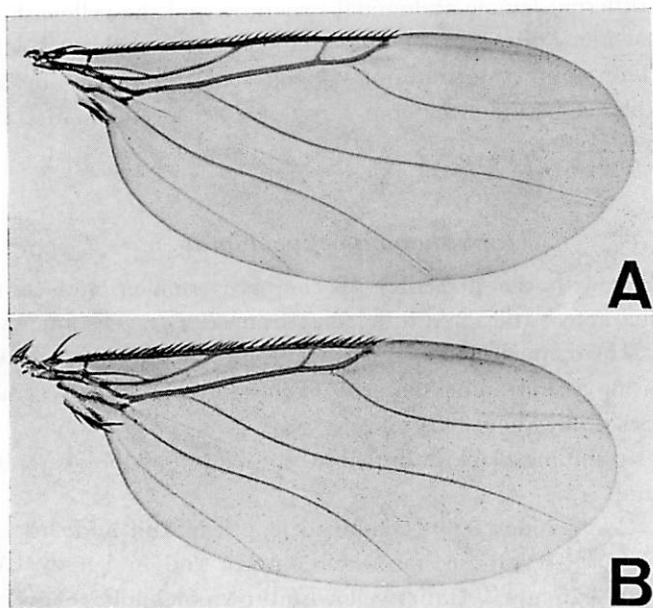


Fig. 4. Wings of *Trophithauma fulvum* sp. nov.

A. Female; B. male.

concaved circular structure, which bears short hairs on its rounded margin. Aedeagus weakly sclerotized on laterodistal portion of left side, and densely spinulose on following portions; lateroproximal portion of right side, middle of dorsal portion and distal 1/2 of ventrolateral portion of left side. Ejaculatory apodeme small, flat and curved.

Body length: about 1.80 mm.

Holotype: Female (Type No. 2428, Kyushu Univ.), Mt. Kitadake (2,240 m), Ashiyasu-mura, Yamanashi Pref., Honshu, 27. viii. 1980, Tadao Gorô.

Paratypes: (HOKKAIDO) 11♀♀, Mt. Rausu (220–1,200 m), Shari-cho, 25. viii. 1977, K. ÔHARA. (HONSHU) 1♂2♀♀, same data as holotype; 1♂, Shimashimadani (1,000–1,300 m), Azumi-mura, Nagano Pref., 14. x. 1982, T. Gorô; 1♀, Hirayu (1,300 m), Gifu Pref., 12. x. 1982, T. Gorô. (SHIKOKU) 2♀♀, Mt. Tsurugisan (1,500 m), Ichiu-mura, Tokushima Pref., 17. x. 1980, T. Gorô; 1♀, same locality and date, K. MAETÔ. (KYUSHU) 1♀, Mt. Sobosan, Taketa City, Ôita Pref., 27. ix. 1979, K. MAETÔ; 3♀♀, Mt. Hakuchôzan (1,300 m), Izumi-mura, Kumamoto Pref., 4. x. 1979, T. Gorô.

Three paratypes (KMNH IR 200007–KMNH IR 200009), 1 female from same locality as holotype and 2 females from Mt. Hakuchôzan, Kumamoto pref. are deposited in the collection of Kitakyushu Museum of Natural History, Kitakyushu (KMNH).

*Remarks.* This new species is easily distinguished from the known species

by the very different female abdominal structures and the yellowish brown body. *T. fulvum* is widely distributed at mountaneous regions throughout Japan and appears in late summer to autumn. I collected this species by sweeping the herbaceous plants in the deciduous forests. The specific name alludes to its yellowish brown color.

***Trophithauma pellucidum* sp. nov.**

Compared with the preceding species, it is smaller and rather blackish. Important characters and main differences from *T. fulvum* as follows.

*Female.* Head much as in *fulvum* but frons shining black; proboscis rather blackish; epistoma subshining; anterior extension of proximal cornu of fulcrum longer. Head width about 0.54 mm.

Thorax subshining blackish brown except for yellow mesokatepisternum and metepisternum.

Wing: Costal index 0.60; combined length of 2nd and 3rd costal sectors  $1.18\times$  as long as 1st; 3rd costal sector 0.61 of 2nd in length. Wing length 1.89 mm, width 0.76 mm. Halter yellowish brown on knob, yellow on stem.

Legs agreeing with description of *fulvum*, including proportions of lengths of leg segments.

Abdomen dull black, grayish brown pollinose. First tergum short,  $1/5\times$  as long as 2nd. Second tergum broad, rectangular,  $1.6\times$  as wide as long. Third tergum  $1.3\times$  as long as wide, more strongly narrowed posteriorly, and more deeply emarginate at middle of posterior margin; 3rd segment possessing a pair of membranous large projections on lateral portions, the projection eversible, transparent, bare and much larger than in *fulvum*. Fourth tergum very small, somewhat trapezoidal in dorsal view, thickened and minutely haired on each side, and bearing several annular organs on its posterolateral portion, carrying orifice of a small gland at middle, the tergum also produced into a small lobe directed posterodorsally on each anterior and posterior margins of the orifice, and forming a cavity on its anterior portion as in Fig. 5, B. Fifth tergum very short, produced anteriorly to form a small extension at middle of anterior margin, the tergum bearing hairs on lateral portions and spinules arranged in a transverse row on its posterior margin; a pair of large glands opening behind 5th tergum. Sixth tergum evenly slender, weakly curved posteriorly, mostly bare; a pair of membranous projections of 6th segment much larger than in *fulvum* and hemispherical. Terminalia: Seventh segment entirely short haired, 7th tergum shorter and broader, more weakly emarginate on anterior margin and more strongly tapering posteriorly, 7th sternum rectangular, weakly emarginate on anterior margin; posteroventral lobes of 8th segment rather short, distally sclerotized and short haired, 8th tergum shorter, subquadrate,  $1.2\times$  as long as wide; lateral plates



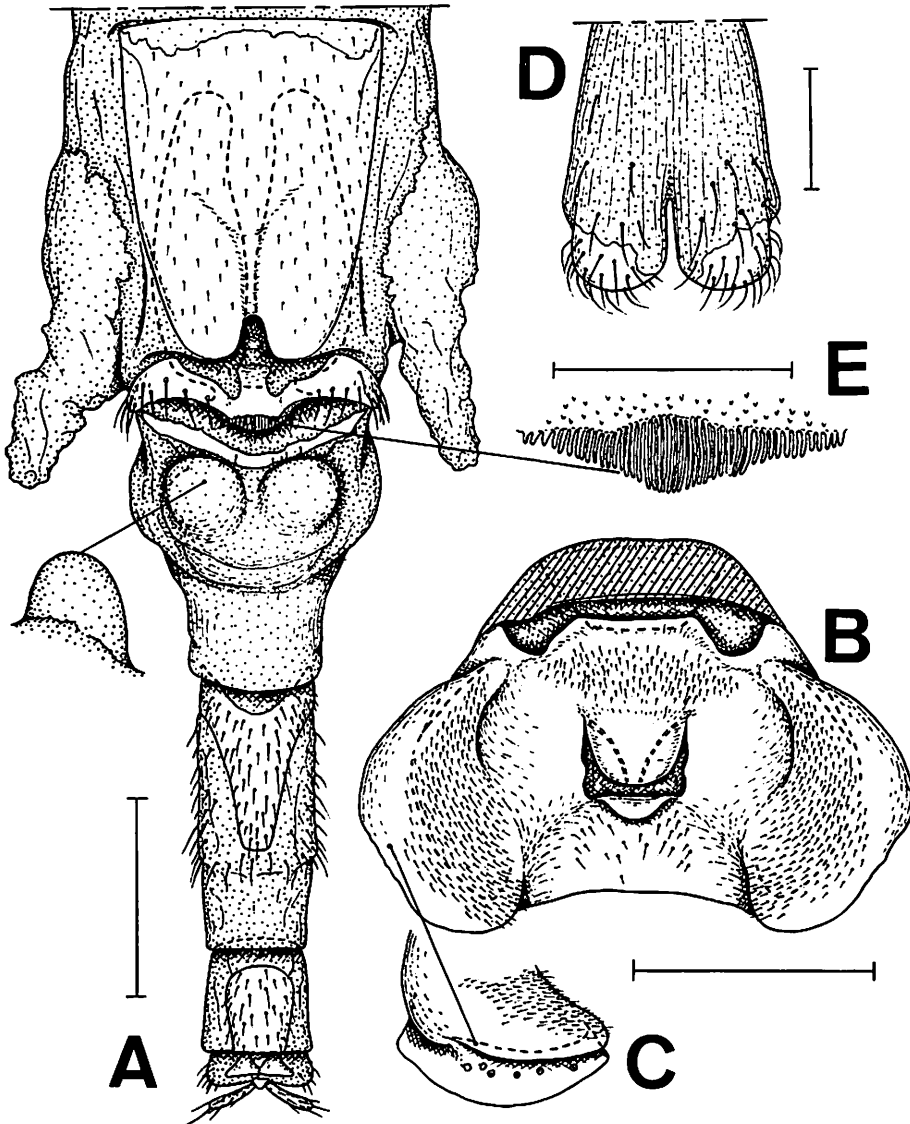


Fig. 5. Female abdomen of *Trophithauma pellucidum* sp. nov.

A. Abdomen in dorsal view (1st and 2nd segments omitted); B. 4th tergum in dorsal view;  
C. ditto in posterolateral view; D. 8th segment in ventral view; E. spinules.  
Scale: A=0.3 mm; B-E=0.1 mm.

of 9th tergum triangular.

Body length: 1.61–1.77 mm.

*Male.* Unknown.

*Holotype:* Female (Type No. 2429, Kyushu Univ.), Mt. Shinnyuzan

(900 m), Hiroshima Pref., Honshu, 14. vi. 1983, T. SAIGUSA leg.

Paratypes: 2♀♀, same data as holotype.

One paratype (KMNH IR 200010) is deposited in the collection of Kitakyushu Museum of Natural History, Kitakyushu (KMNH).

*Remarks.* This new species is most closely related to the preceding species, but is easily distinguished from it by the female abdominal structures, smaller size and rather blackish body. At present *T. pellucidum* is known from the type-locality only. The specific name alludes to the transparency of the membranous projections of 3rd segment.

### References

- BORGMEIER, T., 1963. Revision of the North American Phorid Flies. Part. I. The Phorinae, Aenigmatiinae and Metopininae, except *Megaselia*. *Studia ent.*, 6: 1-256.
- SCHMITZ, H., 1929. Revision der Phoriden. Berlin und Bonn, F. DUEMMER, 211 pp.